



## H.E.F. CANADA QUARTERLY

*The Human Ecology Foundation of Canada*

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## THE HUMAN ECOLOGY FOUNDATION OF CANADA

### The H.E.F. Canada Quarterly

The H.E.F. Canada Quarterly is a publication of The Human Ecology Foundation of Canada, a charitable organization under Canadian law, operating on a non-profit basis. The Quarterly is for people who are interested in health and its relation to our environment. It deals primarily with research in the field of clinical ecology, and also describes how people have improved their health by changes in habits, diet, and environment. As such, it does not offer medical advice, and we urge persons wishing to experiment with changes in their lifestyle to do so with the help and guidance of a knowledgeable physician.

### The Human Ecology Foundation of Canada

One of the purposes of the Human Ecology Foundation is to promote the free exchange of information on the prevention and treatment of ecological illness. People who are ecologically ill are no longer able to adapt well to common exposures in their everyday environment. They may develop a variety of chronic or acute symptoms that are brought on by substances in the air, in food, or in water.

Natural inhalants such as pollens, dust, and moulds, and even natural foods may begin to affect people adversely. This aspect of the condition is often referred to as allergy. But the many synthetic chemicals that are now common around us can also cause symptoms, and overexposure to these can trigger ecological illness even in those with no history of allergy or other sensitivity to the environment. Symptoms may be mild and merely annoying, or they may become severe enough to interfere with a person's daily activities, family life, and career.

On a local basis, HEF Branches work toward finding sources of chemically less-contaminated food, water, clothing, and household furnishings, as well as providing counselling on changes of lifestyle that may alleviate symptoms. The Foundation and all its Branches would like to encourage others to become involved not only in research on the effects of environment on health, but in working toward a healthier, less-polluted environment.

### Subscription and Membership

Membership in the Foundation includes a subscription to the H.E.F. Quarterly, which is produced four times per year. Annual membership and subscription fee is \$20.00.

### Product Information

Any products mentioned in the Quarterly should be carefully evaluated for personal compatibility, since individual sensitivities vary widely. Mention of a product does not imply that the Human Ecology Foundation endorses that product or service.

### Notes from the Editor

The staff of the Quarterly wish you much luck, better health, and happiness for 1984.

### Your Contributions

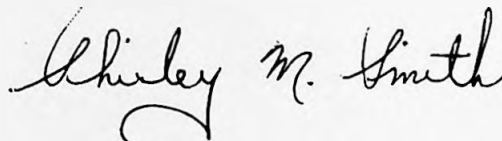
Your contributions for the Quarterly during the past year have been most appreciated. The feedback we are getting from readers indicates that your personal stories, your reports of personal experiences, whether it be with moving or with dentures, are the most popular part of the magazine. Most of us feel terribly isolated and alone; your stories help us realize we are not alone. Your stories are our morale boosters. Please, keep sharing.

### Cover Design

We are hoping to change the cover of the Quarterly from a "Contents Page" to a formal "Cover Page". We need your ideas; we need designs. The only requirements are: (i) that the H.E.F. logo be incorporated into the design, (ii) that the full title of the magazine be incorporated into the design. Send your designs to me in care of head office.

### Renewal Notices

Renewal notices are being mailed with this issue of the Quarterly to people whose membership renewal dates fall in December, 1983, January and February, 1984. If you have already sent in your cheque and you receive a renewal notice, please indicate on your renewal notice the approximate date on which you sent us that cheque and return the renewal notice to head office.



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### Branches

Human Ecology Foundation (Hamilton)  
P.O. Box 4546, Station D,  
Hamilton, Ontario, Canada,  
L8V 4S7

Human Ecology Foundation (Kitchener)  
11 Drew Avenue,  
Cambridge, Ontario, Canada,  
N1S 3R2

Human Ecology Foundation (Ottawa)  
P.O. Box 11428, Station H,  
Nepean, Ontario, Canada,  
K2H 7V1

Human Ecology Foundation (Toronto)  
65 Dolly Varden Blvd.,  
Scarborough, Ontario, Canada,  
M1H 2K2

## Anyone for Gardening?

I would like to turn your thoughts to gardening - a little early.  
First I think we should plant three rows of peas:

Presence: be present at the meetings.  
Perseverance: don't give up when the going gets rough.  
Preparation: be prepared to promote and defend the  
values of our Foundation.

The next three rows would be a good place for squash:

Squash selfishness.  
Squash unkindness.  
Squash complaining.

And now we should plant lettuce:

Let us be willing workers.  
Let us share with other members.  
Let us be proud of our membership in the Foundation.

And three rows of beets:

Beet the chemicals out of our homes.  
Beet the doors down for organic foods.  
Beet the system by daring to be different.

No garden is complete without turnips:

Turn up for meetings.  
Turn up with new ideas and a positive attitude.  
Turn up with determination to help someone who wants  
to help himself.

Carry these seeds with you.

Don't forget to keep them well watered with love and kindness.

Allow plenty of sunshine in your friendly smile.

Soon your harvest of loyal, helpful members will be a bumper crop.

Recently I tried my gardening philosophy and attended the Society for Clinical Ecology Seminar in Colorado Springs.

The peas were very important. All my "Preparation" for the trip, however, ultimately required a great deal of "Perseverance" with the airline involved - there was no oxygen available for me. I had to wait for the next flight.

During the next  $4\frac{1}{2}$  hours the "squash" seeds were planted. "These airport people don't understand ecological illness. Just go to sleep." I did and the security personnel woke me up.

When the going got rough, the "let us" seeds were crucial - let us be willing to try.

I "beet" the system by daring to be different - ate no food on the plane, used the oxygen, and then slept some more.

The garden was complete when I "turned up" in Denver. The next day a positive attitude returned and I attended the conference. The speakers at the conference stressed that recovery from and control of ecological illness is a package

deal: a healthy lifestyle, a clean environment (at least an oasis), a rotation diet, and neutralizing serums.

Oh, by the way, my trip home was less eventful. A different airline was prepared to deal with my requirements and I was accompanied by four unselfish and caring members of our Foundation.

Darlene Koski  
President H.E.F. of Canada

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### Branch Reports

#### Kitchener

Next meeting: on "Organic Gardening" on Tuesday, February 21/84  
-St. Paul's United Church, Preston- 8:00 PM!!!  
-our speaker, Cheryl Lucas, is a former school teacher who now conducts seminars on organic gardening. She stresses companion planting to avoid pests and will demonstrate how to preserve using a dehydrator.

Our draw was most successful. We want to thank our members for their co-operation. We especially wish to commend Nora Schallhorn who put a tremendous amount of time and effort into the campaign.

Our Library is now located at 664 Rockway Drive, across from the Rockway Golf Course Club House in Kitchener. We will be putting books into the public libraries in the area, as well as purchasing sound equipment for use in our public meetings.

#### Report on Human Ecology in the Schools

I will be working with Darlene Koski, of the Toronto Branch, at consolidating material for use by school administrators. This finished report will be published in the Spring '84 Quarterly. Any ideas that you may wish to contribute will be most appreciated. Please send them to me at 644 Rockway Dr., Kitchener, N2G 3B4.

Anne Schreiter

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Available free: The Corning Source Catalogue  
P.O. Box 1725, Dept. 222,  
Lubbock, Texas 79491

In it is a good selection of glass dishes, storage containers, and cookware with all glass tops. I found that many items that must be purchased in a set in department stores can be purchased singly in the size you need from this catalogue.

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## Biographical Sketch

Christopher Brown, publicity director of the Ottawa branch of H.E.F. Canada has recently become a member of the board of directors of our organization.

Chris is a graduate of the Radio-Television Arts programme at Algonquin College (Nepean, Ontario), and of the Electronic and Film Media programme at the Banff Centre, School of Fine Arts, Banff, Alberta.

Chris has done extensive work with Ottawa Cablevision and with CBC T.V. News. He has been particularly involved with public affairs and public services documentaries. As a hyper-sensitive individual and a member of the media, he is committed to educating the public about ecological disease.

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Note: From the Department of Services to Disabled Persons,  
University of Toronto

The Co-ordinator of this department has been approached by some members of the University community who feel that they cannot function as well in some rooms/buildings of the University as in others, possibly as a result of environmental factors present. Some of those severely affected consider themselves to be ecologically or environmentally disabled.

In order to determine the full range of the situation, those who have experienced such a problem are encouraged to contact: Eileen Barbeau, at 978-3011 or 978-3337 (T.D.D.). Confidentiality is assured.

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Note: The Human Ecology Foundation of Canada is also interested in hearing from anyone who has had problems at work which he/she feels have been environmentally induced. Please describe your health problem, its duration, its cause as you see it, and any action taken by you and by your employer. Please mark your envelope "Environment" and send your replies to:

Ms. Darlene Koski, President,  
Human Ecology Foundation of Canada,  
65 Dolly Varden Blvd.,  
Scarborough, Ontario,  
M1H 2K2.

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Note: Chris Nikiforuk reports that he has had excellent results with organic milk and milk products purchased from the farm of Bud, Paula, and Jody Kirchner (Kirchesse Farm), near West Guilford, Ontario. The Kirchners also have available some organic meats and vegetables. For further information, Telephone 705-754-2530.

## Report From Colorado

Dr. John K. Blair

The 18th annual meeting of the Society for Clinical Ecology was recently held at the Broadmoor Hotel/Resort in Colorado Springs, Colorado. We were kept busy with the presentations and lectures from 8:30 a.m. until 5:00 p.m., but there was one free afternoon during which some of us drove up into the mountains to enjoy the scenery. The main part of the hotel has an elegant, traditional, old-world decor and I felt that I was part of an old movie set.

The Canadian contributions to the meeting included fine presentations from Dr. MacLennan, Dr. Krop, and Dr. Gerrard. The value of the meeting is to be measured in terms of stimulation rather than in specific new information. Since everyone sees things from a slightly different perspective, it is valuable to learn of other doctors' approaches to diagnosis and treatment. Hearing about the approaches everyone else is using helps to keep you open-minded and more versatile.

Our thinking can be quite unproductive if we are always looking for the one right answer to a problem. In clinical ecology there is seldom, if ever, one right answer. As various doctors described some of their most successful cases, they listed the approaches they used to get the good results. The "right answer" in these cases turned out to be a long list of measures.

### The Measures

#### I Approaches to Food Sensitivities

- (a) A diet consisting of simple basic foods without a lot of refined foods with additives
- (b) Avoidance of major foods that consistently cause strong reactions
- (c) Rotation of the other foods
- (d) Subcutaneous or sublingual treatment of food allergies
- (e) Occasional use of nalcrom to prevent or lessen reactions
- (f) Use of organic or chemically less contaminated foods

#### II Approaches to Chemical Sensitivities

- (a) Avoidance of chemical fumes as much as possible - especially in the home
- (b) Treatment with neutralizing drops of chemicals when possible
- (c) Use of antioxidant supplements to prevent or reduce chemical reactions

### III Approaches to Inhalant Sensitivities

- (a) Avoidance of inhalant antigens such as dust, mold, and animal dander when possible
- (b) Sublingual or subcutaneous treatment for inhalant allergies

IV Use of Safe Water

V Treatment of candida albicans (yeast) infections

VI Use of vitamins, minerals, and essential fatty acids

VII Stress management: taking into account all the mental and psychological factors and mental attitudes that can lower your resistance, make you sick, or keep you sick

VIII Correction of hormonal abnormalities such as hypothyroidism, treatment of hormonal imbalances (especially estrogen and progesterone problems in women) either with supplements or the use of "neutralizing" doses sublingually or subcutaneously.

### Conclusion

The ideal scientific approach involves a change in one variable while all other variables are kept constant. This is easier to do with rats or animals since psychological factors are not quite as important for them. The ecological approach means using multiple treatment measures simultaneously. Should we treat ragweed and see if there is any improvement, for example, or should we also be concerned about milk which combined with ragweed can gang up on you? Should we also be concerned with mold which is a problem at the same time of year? Should we also be concerned with the stress of going back to school during the ragweed season? Should we concomitantly consider the fact that you have closed up the house during the cooler weather, that the furnace is starting to come on, and that there are, therefore, the oil or gas fumes and more house dust circulating? The ragweed treatment by itself might be useless unless we deal with all the other problems.

Let's not look for the one right answer; let's look for all the right answers.

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### Editorial Staff

Editor: Shirley Smith

Associate Editor: Brenda Koski

Editorial Board: Dr. John Blair (Chairman)  
Mrs. Louise Cameron

Typist: Margaret Schiedel



## Impressions

- I cannot make you happy if you are unhappy, but I can prove to you that happiness is still possible. I can show you the face of joy; I can remind you of the excitement that flows simply from being alive. I can make you laugh.
- I cannot ease your guilt, if you feel you are guilty. But I can offer you a mirror in which you see someone who is not always wrong. I can remind you that there is at least one person who has found you to be honest, fair, and open. I can tell you that ours is a relationship in which there is no manipulation. I can let you know that you have given to me as much as you have taken from me. Perhaps more.
- I cannot take away your pain. Only time and your own healing can bring that about. But I can help you to forget the pain once in a while; I can divert you from the past and encourage you to live in the present; I can provide you an oasis in which there is only pleasure. I cannot make you forget. Nor do I want that.
- I care about you because of the person you are now, and all the past experiences, good and bad, are part of the formula. But I can teach you how to turn the past into a foundation for something more honest, more giving, more lasting in future.
- I cannot banish the ghosts that sit on the end of your bed at 4 o'clock in the morning. But I can give them some competition. I can weave some memories that will be more pleasant company as you await the dawn; friends shared, the gasp of sails straining for the wind; music, talk, good food, touch, and wine.
- I cannot replace anyone. But then I'm an original, not a substitute. I offer you something I suspect is new to you; no games, no pressure, no exploitation. If I need something I will tell you; if you can't give it, I will understand.
- I cannot make you feel if you have closed your soul to feeling. But I can be very patient. Where there is joy and companionship and laughter and ecstasy, there may, in time, be feeling.
- I cannot make you love me if you are frightened of the vulnerability that comes with love. But I can love you; I am good at that. I can give you the gift of friendship; show you that some men/women can be trusted; teach you that there are some sentences that have no hidden meaning; I can care about you. And I do!

Author Unknown

## Candida Albicans - The Yeast Connection

Irvine A. Korman, B.A., M.D., F.R.C.P. (C)  
Clinical Ecology & Nutrition  
(Environmental Medicine)

### The Problem of Diagnosis

In our conventional medical training, Candidiasis did show up in the medical books. We learned about the white tongue and the sore bottom of a baby, and about Thrush in the esophagus as well. This is our traditional understanding of Candidiasis or Moniliasis. We were taught to use drugs to treat this topically and symptomatically. When the disease regressed or cleared, we were told that all was well. It was like giving antibiotics for pneumonia. When the pneumonia resolved and the person felt better, we just stopped and never thought more of it.

Doctors also met the problem of Candidiasis with terminally ill patients. With Cancer patients, Candida often appeared in the urine or bowel when they developed diarrhea. These people were not doing well and it was felt this was a normal thing. We felt it was due to the fact that the immune system was overwhelmed. The Candida would take over and be present as an invader and we never really connected much more with it. Looking back now, we realize that Candidiasis is probably a part of a weakening of the immune system.

In 1979, I met a doctor by the name of Dr. C. Orion Truss in San Diego, who spoke on the problem of Candida. His address was a revelation for me. Candida Albicans is a yeast, a member of the mold family. It is present with us at birth, sits there as a saprophyte along with all the good germs, and there seems to be a happy balance. It is normally found in the colon, the female genital tract, and on other mucous membranes. We can culture it, if we want to, but it really is not important to do so. If a person has this Candida problem, culturing it really does not solve the problem. Dr. Truss put together a collection of his experiences of over twenty years and noticed that when he treated patients for Candidiasis with yeast extracts, a lot of their other symptoms, other than what they were being treated for, resolved. The patients' headaches, their muscular pains, depressions, whatever they had, also improved. Dr. Truss noticed that with Candidiasis or Moniliasis, three sets of symptoms seemed to dominate. Most of the patients showed cerebral symptoms such as depression, anxieties, phobias - the traditional ones we see in our North American culture. Secondly, they also had gastrointestinal symptoms such as heartburn, acid regurgitation, bloating, abdominal pains, diarrhea, and constipation. I think constipation was the most common one. They also had genital-urinary symptoms such as recurrent urethritis, cystitis, abnormal menstrual periods, irregular periods, and premenstrual syndrome. These people may be really tough to live with right after ovulation. They were very sad cases and most of them were labelled as "Neurotics". Before I knew much about ecological illness, these people would come into my

office and recite a multitude of symptoms from different body systems and I would think to myself, "When are you going to stop?" But they would only continue and keep going off on different tangents. They were having central nervous symptoms, gastro-intestinal symptoms, bladder symptoms, and so forth. I just could not figure all this out.

I was taught the law of parsimony in medicine. The law of parsimony suggests that you try to tie everything up to one diagnosis; you try to look for one unified process. I kept trying to figure out how I was going to tie all this to one person and I could not do it. Traditional doctors would say, "Well, I don't know, you must be funny!", and their first approach was to give the patient a tranquilizer, or something to calm him down while they tried to sort out some laboratory investigations. When the tests came back normal and the patient still complained, the doctor would say, "Maybe we better try a different pill, perhaps a stronger pill", and have the patient undergo a few more tests. Again, when the doctor asked, "Well, how are you now?" and the patient replied, "Not that much better", the doctor would say, "Perhaps you are having emotional problems. How are you and your wife getting along? I hear your son is not too well. How is your daughter? You may be having psychological problems. Maybe a psychiatrist ought to see you." Dr. Truss noted that these patients had seen many doctors, that their histories were very lengthy, and that females outnumbered males about four to one. One must realize that females have a more difficult burden to bear. They have female hormones to contend with and are the ones who must bear the children.

## The Causal Factors

### (1) Toxic Chemicals

What went wrong in all this process that created this problem? Dr. Truss's investigation showed that there was excessive exposure to toxic chemicals in a lot of these people. My daughter, Lucinda, was in her third year of Visual Fine Arts at York University when she became ill. Many of her classes were in the Phase Two Building which I had difficulty entering because of the smell of chemicals. That was the year she broke down and we really don't know whether the chemical exposure injured the immune system or the immune system was injured allowing the Candida to grow.

The young people of today are at a decided disadvantage. They are permitted to smoke at a young age and then go on to have dysmenorrhea and take birth control pills. They often have acne and are put on antibiotics and this is another exposure. They go to fast-food outlets where they ingest more chemicals and refined foods. Thus, they are subject to many more chemical exposures than were previous generations. I really feel sorry for the youth of today because they are not getting a good start. They are being hammered both right and left, and it is going to take a major overhaul in our society to put them back on the proper path.

## (2) Nutritional Deficiency

Compounding the problem of chemical exposure, we have nutritional deficiency. We have an exorbitant amount of sugar in our diets. I realize that everyone likes "food that schmecks", but one can still make food that is delicious without loading it up with sugar, whether it be cane sugar, beet sugar, honey or maple syrup. We develop nutritional deficiencies from an overload of sugar as well as from refined foods.

In my two previous articles in The Human Ecology Foundation Quarterly, I alluded to the various levels of the qualities of eating. The first class is the raw fresh foods, the second class is the cooked food, the third is frozen and canned food, and the fourth class is the refined foods where the food has lost much of its nutrient value. If you take food in its natural state, either raw or lightly cooked, as in a wok, you do not do as much harm to the food and the food retains most of its goodness. As you start to process it more and more, for example, from brown rice to white rice to instant rice, there is not an awful lot of good left. Thus, in many of our diets, there is a deficiency of vitamins.

The Canadian government has done surveys of our youth and found vitamin and mineral deficiencies. Vitamin A and iron are two of these. In my experience with total parenteral nutrition, I have learned that if you do not give a person all the ingredients, he may come down with a deficiency disease. The one I remember particularly was associated with the mineral called Chromium, the glucose tolerance factor. During the course of total parenteral nutrition, we initially did not administer Chromium and we noted an elevation of blood sugar. When the Chromium was put back in, the blood sugar came down. Others noted that if you gave Type II Diabetics Chromium in an absorbable form, in fifty percent of them the sugar became normal. Many people with Candida exhibit hypoglycemia, so there is a definite inter-relationship here.

Many diets of today are also deficient in essential fatty acids. In the last year there has been a mushrooming of information about this. There is interest in the field of prostaglandins. Aspirin was found to be a prostaglandin inhibitor and anti-inflammatory drugs for arthritis are found to be prostaglandin inhibitors.

Researchers have also discovered that there were two groups of essential fatty acids: the Omega 3 fatty acids and the Omega 6 fatty acids. Eskimos live on a diet which is very high in Omega 3 fatty acids and they are renowned for their lack of arteriosclerosis. The Eskimos eat a diet high in cold water fish. Actually it is the plants on which the fish feed that are important. In the warmer climates, the plants supply Omega 6 fatty acids. Omega 3 fatty acids are marketed in a product called "Maxepa". The Omega 6 fatty acids are marketed in a product known as "Efamol".

### (3) Severe Infections

Another reason people come down with an immune dysregulation is a bout with a severe bacterial or viral infection, for example, with infectious mononucleosis. This all results in a weakened immune system and Candida proliferates and does not allow the gastrointestinal tract to carry on its normal functions. The gut appears more porous and allows some of the incompletely digested food to be absorbed, hence the beginnings of food allergy or an aggravation of a pre-existing food allergy. It appears to be a vicious cycle no matter where you start, comparable to dropping a stone into a pond and watching the ripple effect. This is best illustrated in very severely debilitated people who may come down with one problem, and the next thing you know they develop food allergies, then inhalant allergies, then chemical allergies, and the physical problems keep galloping on. These people are so-called "Universal Reactors". We basically see these conditions when there has been an abuse of antibiotics: particularly in our youth with the acne problem and their use of tetracycline, and in the chronic bladder infection where you are taking long-term sulpha, when there has been birth control pills and the long-term use of steroids for various purposes, for example, for the control of asthma.

We see the effects of the chemical toxins found in cigarettes and addictant drugs, of the high carbohydrate diets, and of the refined diets in all age groups: from children with learning disabilities or the attention deficit syndrome to teenagers with behavioural disorders. As well, we see adults with many organ system complaints that we cannot figure out. We see more females than males. The females have problems with hormone disorders while the males have prostate and gastrointestinal tract problems.

### Treatment

What can one do about all this? In addition to seeing a doctor who specializes in Clinical Ecology, there are some excellent books which expand on the subject of the yeast connection. Dr. Truss brought out a book which was the compilation of his many years of experience, The Missing Diagnosis. Dr. W. Crook also published a book titled The Yeast Connection. Two other books published contain chapters on the yeast connection. The first is The Complete Book of Allergy Control by Laura J. Stevens, the second is a book by Dr. Allan Scott Levin called The Type I and Type II Allergy Relief Program. Thus in a very short period in 1983 there has been a tremendous amount of work published revealing a great interest in the Candida problem.

Prior to any medical treatment, I always rule out organic disease. This is why it is important to consult a physician, rather than use a book as a guide or mentor.

You may, if you want to, having recognized the problem, try a Candida Control Diet, which consists basically of getting rid of high carbohydrate foods, going on to Level 1 and Level 2

of eating, removing the sugar, carbohydrates and refined foods, getting rid of the yeast and mold in your diet and, basically, avoiding all of your food addictions. You may get a trial of Nyastatin powder from your doctor. Your physician may wish to test you for your Candida sensitivity to tell you how sensitive you are to it - whether you are mildly, moderately or severely Candida Albicans. It helps him to classify you and to know how to treat you. While Nyastatin is generally taken orally, depending on your problem, it may be used as a nasal spray, or as an oral gargle, a vaginal douche or an enema.

If your diet is inadequate, it must be complemented with supplements that are compatible. Do not take supplements with yeast or sugar in them. Make certain that the excipients are also compatible. If you can manage to go on a four day rotary diet and sort your food problems by families, with counseling, you will eventually learn what your food sensitivities are. Very sensitive people should also rotate their supplements.

In our practice we use immune-therapy, using food antigens for those patients who have such a limited diet because of their sensitivities that they really cannot cope. We have divided our Candida Control Diets into Candida 1, 2, and 3. The Candida Control Diet 1 is composed of vegetables, fruits, fresh fruits, meat, beverages, whole grains, nuts, seeds, and oils. You avoid sugar, yeast, mold, alcohol, malt, condiments, processed foods, dried fruits, and leftovers. Melons are notoriously moldy and are one of the first fruits to be discarded by a food sensitive patient. Peanuts and Pistachios are also known to be quite moldy. If a patient is more sensitive, he must go on the Candida Control Diet 2. He can eat all meats and eggs, including poultry and fish. The carbohydrate content of the diet is lowered, using low carbohydrate vegetables. We remove corn, beans, potatoes and sweet potatoes from his diet. He may eat unprocessed seeds, nuts and oils, and, depending on sensitivity, may cope with some fruit, some non-yeasted grains such as quick breads or non-yeasted muffins and biscuits as well as some cereal grains and milk. Milk is often a problem for Candida patients. Lastly, the Candida Control Diet 3 is for very very very sensitive people, like my daughter Lucinda. Her diet consists of meat and eggs and low carbohydrate vegetables. It is fruit-free, grain-free, nut-free and milk-free.

We also concern ourselves with the mold investigation of patients. Many people are very mold sensitive and we have to look into their working environment as well as their home environment. Some have moldy basements with unfinished floors and various other aspects of their homes which bother them. We must look at the patient's complete environment.

Recovery varies in patients. I have seen great improvement in just a matter of weeks in some people. They themselves recognize it. They get down to brass tacks with their diet and lifestyle and in a matter of weeks to a few months later, come back and say, "I can see the change". They have shed unnecessary poundage. These people are initially toxic and when they start to lose weight, it is mostly water they lose. After a period of time, they lose excess fat. When their diets are established,

they regain a more youthful and healthy appearance. We can see the difference. Thus you see improvement immediately, and as time goes on, you get better. I have had two recoveries in my practice in one year and both of these were males. Most females take two to seven years to recover. It is hard work, but they have no other choice. If they go back to their conventional medicine, they go back to the drugs, the hospitalizations, to a downhill spiral. Most of these people know by their common sense and intuition that this is the wrong route to go.

The Candida Albicans problem is just part of a more comprehensive work-up. We look at chemical sensitivities; we look at their food; we look at their inhalants; we look at their water; we look into their mouths to see if they have silver mercury amalgams. Silver mercury amalgams are made up of 50% mercury and 35% silver. In some individuals their insertion happens to be the turning point in their life, as well as Candida. In some patients removal of the silver mercury amalgams seems to turn them around, for they may be mercury sensitive and mercury, as you all know, is 100% toxic.

We also welcome help from other disciplines such as acupuncture, accupressure, chiropractic, stress reduction through music, dance, hobbies, language study and exercise. The patients may also have spiritual help whether through a minister, or through bio-feedback, or hypnosis to help them stop smoking, or through affirmation techniques or through visual techniques they have learned. We have to touch all the bases.

We have to take into account their addictions because these are the pitfalls, the stumbling blocks that get them off the track. We have to make certain they get some support from their family or their spouse, because if the patient's spouse does not help, he is not going to be too successful. We can be the smartest doctors in the world, we can have the best techniques in the world, but if the opposition out there is stronger than we are, then we are not going to succeed.

I must mention a herbal tea that some of you may have come across. It is called La Pacho Tea. This tea is made from the inner bark of the La Pacho tree which grows in Brazil. This tea is made by boiling four cups of water and adding a tablespoon of tea to the water, simmering it for 20 minutes, steeping it for another 20 minutes, and then drinking it. Some patients drinking the tea found that they were helped and could reduce their dosage of Nyastatin powder, because the ingredients in the tea would destroy Candida and other fungi. It was found that no mold or fungi would ever grow on the La Pacho tree. Conversely, we have had a few patients drink the tea and become worse because they were sensitive to it. It is like everything else, you must use it with caution. If you can tolerate it, you may want to place it on a rotary basis like a food.

We are also concerned with stress. Counselling is where the Human Ecology Foundation comes in, helping people to help one another.

In conclusion, my experience reveals that those patients who are compliant, get the best results.

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#### Books

C. Orion Truss, M.D., The Missing Diagnosis. Available from P.O. Box 26508, Birmingham, Alabama, 35226. Price: \$28.00 in U.S. funds (covers postage and handling as well).

William G. Crook, M.D., The Yeast Connection. Available from: Professional Books, 20 Redbud, P.O. Box 3494, Jackson, Tennessee, 38303-0494. Price: \$16.00 in U.S. funds (covers postage and handling as well).

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#### Editor's Note:

This article is a synopsis which Dr. Korman has prepared of his speech to the members of the Human Ecology Foundation of Canada, Cambridge Branch at St. Paul's United Church, Cambridge (Preston) on Saturday, November 19, 1983.

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#### Caution Regarding Medication

In the last Quarterly, Dr. Sherry Rogers outlined her interest in the use of primrose and linseed oils as therapeutic agents in the management of ecologic disease.

The clinical ecologist is always searching for safe new "keys" with which to unlock the ecologic puzzle. However, it is important that each of us, doctor or patient, use any unknown or new medication with great caution lest it produce new symptoms or aggravate existing complaints. Only a single medication should be tried at one time.

Both primrose and linseed oils can be very potent sensitizers and should only be used under a clinical ecologists's direct, on-going supervision. They should not be used on a self-medication basis.

Dr. J.G. MacLennan

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# Growing and Preserving Organic Food

Ken McMullen

## The Advantages

I have been growing food organically for almost fifteen years and teaching intensive raised-bed techniques for half of that time. I now control the production of about three-quarters of all the food that my family eats, but it all takes time. I spend about one day per week growing and preserving food and tracking down organic farmers and distributors. As a management consultant it would take me less than one week to earn the money to buy an equivalent amount of commercial food. Is it worth all the effort? Yes!

The quality of my food is the highest. It has exquisite flavour - remember when store-bought lettuce or tomatoes had flavour? My health and energy have improved every year. I can resist the stress of urban living without minor illnesses. I have a deep sense of security knowing that I will eat, no matter what happens and I find inner peace by being in tune with nature's rhythms.

Growing and preserving food feeds my body, stimulates my mind, and satisfies my soul. All in all, a bargain at twice the time.

## I Preserving

Food growing is seasonal. Most crops are at their peak for no more than two weeks of the year. Concentrate first on learning to process food in large quantities. For two of us I have a twelve cubic foot freezer, 300 plus mason jars and space for bushels of squash and root crops in a cool laundry room in the basement. Jars with herbs and grains are stored in the kitchen. These are not ideal preserving conditions, but they work. Fruits are frozen or canned in honey. Vegetables are frozen or stored loose or in sand in bushel baskets. Herbs are hung from basement rafters to dry and then stored in glass-topped jars. Flour is frozen and whole grains are stored in sealed plastic bags. For further instructions, I recommend:

Home Preserving Made Easy: A Complete Guide to Pickling, Smoking, Canning, Drying, Freezing, and Jelly-Making. Vera Gewanter and Dorothy Parker, New York: Viking Press, 1975.

## II Growing

### (a) Land

My backyard in Toronto is small (50' x 17'), yet there are thirty-six different edible plants, a fish pond with carp, flower beds, a pear tree with five different kinds of pears, blueberries, strawberries, raspberries, a dozen herbs, seasonal vegetables from April through November and a lawn for sitting and enjoying it all. This gives me fresh food for the summer.

Food for winter and spring is grown co-operatively

with three other families near Bellefountain. Last year the co-op garden was 65 feet by 65 feet for annuals and will probably double in size as perennials and orchards are added. The land is owned by one of the co-op members. In previous years I have rented land from a local organic farmer.

These two gardens produce about one half of my food which I supplement with bulk purchases from organic farmers and grain distributors.

#### (b) Techniques

I grow plants very intensively on soil that is raised into mounds. The trenches between the mounds become pathways. Growing beds are never stepped on. Through careful planning, three and four crops can be planted in the space usually used for one row crop. Companion planting is the juxtaposition of plants which strengthen and defend each other. Tomatoes, peas, spinach, carrots, and radishes are all companions but tomato, potato, and cabbage tend to poison and inhibit each other. Using companion planting, the same piece of soil can be used in the spring for lettuce followed by onions in the summer and chinese cabbage in the fall.

Careful planning and a wide diversity of plants defends the garden from excessive loss from insects, diseases, or fungi. The whole garden is an integrated, balanced ecology.

My gardens are designed as closed systems. All organic matter is recycled through compost heaps. Nutrients taken out of the system (usually as food) are replaced with manure or additives such as blood, bone, and kelp meals, wood ash, dolomitic limestone and granite dust.

Soil moisture and temperature are stabilized with mulch (straw, cocoa shells, black plastic, etc.) creating an ideal environment for worms and soil micro-organisms, the real workforce of the garden.

#### (c) Tools

All work is done by hand. It is personally more satisfying and I have found that mechanization forces me to spread out and in the long run, creates more work than it saves. My tools are simple: a four-prong garden fork, a hoe, an iron rake, a hay fork, a pointed shovel, a hand trowel, and a watering can.

It takes about three or four years of heavy work to develop loose fertile soil by hand. After that it gets easier and easier. By the sixth year, the garden and its inhabitants will be able to do most of the work. Productivity increases every year while labour decreases in a balanced organic garden.

(d) Training

In a short article I can only touch the surface of something which is incredibly complex and fascinating. Fortunately, nature and experience are the best teachers. All that is really needed is an open loving attitude and your garden will respond with bounty no matter which theory you use.

For those who would like more information about intensive and organic techniques, I can recommend several books. I have also prepared two courses for both beginners and advanced growers.

Books:

How to Grow More Vegetables by John Jeavons, published by Ten Speed Press, P.O. Box 7123, Berkeley, CA, 94707, 1979, 115 pages.

Square Food Garden by Mel Bartholomew, published by Rodale Press, Emmaus, Pennsylvania, 1981, 346 pages.

Northern Gardener by Jennifer Bennet, published by Camden House Publishing Ltd., Queen Victoria Road, Camden East, Ontario, K0K 1J0, 210 pages.

The Basic Book of Organic Gardening edited by Robert Rodale published by Ballentine Books of Canada, Toronto, 1971, 378 pages.

Courses:

I have designed and published a correspondence course in "Intensive Organic Gardening". Each section of the course covers a different season and describes step-by-step procedures for building and maintaining a balanced closed system for growing healthy food.

"The Basics of Backyard Organic Gardening" is a six weeks course I give at the Civic Garden Centre, Edwards Gardens in North York from 7:00 to 9:30 P.M. This year the course runs on Wednesdays, March 14, 21, 28 and April 4, 18 and Saturday morning on April 21.

(e) Costs

You can expect to pay up to \$500.00 per year for the first 3 years declining to \$100.00 or less per year after that time. The cost breakdown is:

- (1) Land rental: \$25-50.00 per family per year for co-op gardens
- (2) Tools: \$125.00
- (3) Seeds and perennials: \$70.00 per year
- (4) Fertilizers and mulch: \$50.00 per year
- (5) Bulk food purchases: \$200.00 per year
- (6) Books: \$3.00 to \$24.00 each
- (7) Courses: Intensive Organic Gardening - \$50.00  
Basics of Backyard Organic Gardening - \$70.00

## Returns on Investments

Health, happiness, peace of mind, satisfaction for the soul, about \$500.00 worth of fresh produce and \$1200.00 worth of preserved food plus a true appreciation of food quality and flavour.

Happy growing!

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\* Ken McMullen is a national director for "Canadian Organic Growers", a teacher, speaker, and writer on intensive organic gardening and urban agriculture. For further information, he can be reached at 416-484-9345 or by writing to:

Ken McMullen,  
Management Consultants,  
46 Lorindale Ave.,  
Toronto, Ontario,  
M5M 3C2.

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Note: Canadian Organic Growers publish a quarterly newsletter, "Cognition" to keep members in touch with each other and with the latest developments in organic gardening. The membership fee is \$5.00 per year. Contact:

Lida McMartin, Membership Secretary,  
Canadian Organic Growers,  
146 Elvaston Dr.,  
Toronto, Ontario,  
M4A 1N6

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## Note: Seeds of Yesterday and Tomorrow Conference

The Canadian Organic Growers (COG) is hosting a conference on February 11 and 12, in Toronto, Ontario, at the Civic Garden Centre, Lawrence Ave. and Leslie St. The topic - the preservation of heritage seeds and issues related to genetic diversity in food plants. The conference will also serve to launch COG's national Heritage Seed Program and its first seed catalogue. Conference registration is \$10 per person, per day. People unable to attend the conference are also urged to participate in this important program. Contact:

Canadian Organic Growers,  
c/o Ken McMullen,  
46 Lorindale Ave.,  
Toronto, Ontario,  
M5M 3C2.

Or phone: (416) 484-9345.

## ORTHOMOLECULAR NUTRITION AT THE ZOO

A. Hoffer, M.D., Ph.D.

### Veterinary Colleges vs. Medical Colleges

Veterinary Colleges are much more interested in good nutrition than are medical colleges. In a city I know well, the college of medicine has recently created a section on nutrition - but only after they paid attention, reluctantly, to the demands of their medical students. None of the nutritional staff have any experience in treating patients with nutritional therapy and they perpetuate the bizarre belief that a diet of balanced junk food is perfectly adequate, and therefore, requires no supplements. Before this section was created, the graduates left medical college opposed to nutrition because of ignorance and disinterest. Since it has been created, graduates will come out actively hostile, since they have mastered the wrong information. A veterinary college not far away has an excellent nutritional program and its faculty continues to publish nutritional reports designed to maintain the health and productivity of animals. The medical college still has virtually no research program into human health via nutrition.

### "Tame" Food; Wild Animals

Zoos are becoming as aware of the importance of good nutrition as are veterinary colleges. They have moved far from the days when they were content to keep their animals alive over the summer season. At one time animals were given minimal quality food and visitors introduced the animals to the pleasures of junk food, popcorn, candies and white bread.

Sometimes I watch the wild ducks in a lovely park in Victoria. They no longer fly south in the winter and spend much of their time scrambling and begging for food from their many human admirers. Their consumption of white bread is quite remarkable. Every time I watch them being fed I wonder how their health compares with their wild brethren. Perhaps they are too weak to fly south each fall.

### Orthomolecular Revolution at the Zoo

Today, zoos realize that they must keep the animals alive and well and even contented.

Recently I read Sally Tongren's little book What's For Lunch. It contains a large number of excellent pictures of animals from the Washington Zoo and describes what they eat in the wild and how they are fed at the zoo. After reading this remarkable book, I realized that the Washington Zoo practises orthomolecular nutrition, the kind described by Hoffer and Walker (1978).

(A) The Cage

There has been a remarkable revolution in the attitudes of zoologists to animals. Not so many years ago, it was considered appropriate to isolate animals in cages in laboratories or in zoos to study their behaviour. These animals appeared to be remarkably stupid. When other zoologists went into the field to study the behaviour of the same kinds of animals in their natural state, a different picture appeared. An orangutan or a gorilla in a cage alone or with a mate bears almost no relation to the same animal in the native state surrounded by its fellows. It is now generally accepted that behavioural studies of caged animals have no relevance to the study of human behaviour. The only remaining use for caged animals is for toxicity studies of drugs and for neuropharmacological research.

(B) The Diet

The same revolution is occurring in the nutritional environment of animals. Many years ago animals in the zoo were fed food which was easily available and which was based upon food fed pets and livestock. These animals looked sick and were sick, could not reproduce and appeared to be lifeless or caricatures of what they would be in their native, independent state. But today the leading zoos have realized that their animals must be fed the same food they would normally eat if they had not been caught. The problem was to discover what the animals ate in the wild state, not an easy task for most zoologists. When this is impossible, they are fed diets which come as close as possible to that native state. This means that animals are fed living food or food which has been alive recently plus vitamin and mineral supplements. For example, the Washington Zoo will not feed any fish to the seals if the fish have been kept at room temperature for more than 20 minutes, for enzymes in dead fish destroy thiamine and Vitamin E. The koala bear will eat only eucalyptus leaves of a certain age. The Australian government, therefore, will not export any koala bears to any zoo unless this food supply is guaranteed.

(a) The "Balanced" Diet

For over thirty years we have been brain-washed into eating a "balanced diet", selected from the basic food groups. Before 1950, before the food industry destroyed our food supply, this was good advice. But no more. The word "balanced" has been corrupted and has not been applied to individual foods. It is taught and repeated ad nauseum that a person on a balanced diet is well fed and requires no vitamin or mineral supplements. This means that a hamburger on enriched white bread (a bun), french fries, apple pie and a milk shake is a perfectly balanced diet for it does contain food from every food group.

The term "balanced", furthermore, allows each food manufacturer to provide a completely inadequate product, secure in the belief that balance will be provided by other foods. A breakfast cereal completely unable to support life is listed as an adequate food provided it is mixed with milk. What most people fail to realize is that shredded paper is also made nutritionally more adequate when mixed with milk.

(b) True Balance

The term balance should be restricted to whole foods. Whole grains, fruit (with the seeds), nuts, leaves, are balanced. They contain all the protein, fat, carbohydrate and vitamins and minerals originally present and adequate to create new life. A diet which consists of balanced foods only must also be balanced. The greater the imbalance in any one food item, the greater is the total diet imbalance. This means that very few people in the U.S.A. and Canada eat balanced diets, no matter what many academic nutritionists and dietitians proclaim. The consumption of junk food imbalances any diet. The degree of imbalance is directly related to the quantity and quality of the junk food.

The Washington Zoo is concerned with the balanced nature of the food and determines how much variety is required by knowing the natural diets of each animal. Some animals require only one food. The anteater remains healthy on ants and the koala bear is healthy on eucalyptus leaves. This kind of diet would surely not fit in with the current definition of a balanced diet. Other animals are given a wide variety of foods which match in variety what people eat. Primates, being omnivorous, generally require a richer, more varied diet. Herbivores and carnivores require less varied diets.

Even when native diets are used, however, the zoo realizes that vitamin and mineral supplements are often required.

WHAT SOME OF THE ANIMALS ARE FED

A. Primates, Our Closest Animal Relatives

Primates are more omnivorous than most and can live on foods of animal or vegetable origin. The bulk of the food is vegetable, but in the native state is supplemented with animal food whenever it can be caught.

The orangutan in its native habitat lives on fruit, bark, leaves and eggs. The zoo thus feeds them fruit, vegetables, monkey biscuits, eggs and meat. Monkey biscuits are especially made for primates from whole cereal supplemented with vitamins and minerals.

The gorilla lives on pith, stalks, vines, leaves, bamboo, roots and fruit. At the zoo they receive breakfast and supper. For breakfast the menu includes reconstituted non-fat dry milk (fortified with brewers yeast), 2 raw eggs, 5 ounces of meat, 1½ pounds monkey biscuit and 6 ounces of rice cake. The supper menu consists of 2½ pounds of kale, ½ pound of green beans, ½ bunch of celery, 2 apples, 3 bananas, 2 oranges and 1 egg. They also receive vegetable du jour. Each day different vegetables are given to prevent monotony.

#### B. Herbivores

These live primarily on vegetable foods, largely grasses and leaves. They have special digestive tracts which break these foods down into their components so that they can be adsorbed.

The giraffe, in the native state, lives on acacia leaves, other leaves and grass. In the zoo they are given alfalfa hay, hydroponic oats (sprouted oats), and special feeds. Hay is not a good food for it has been dead for a time. In the native state animals eat fresh grass, living grass. They do not harvest the grass and eat it six months later. The zoo recognizes this fact but makes up for it by giving the animals living (sprouted) oat plants.

#### C. Carnivores

These animals cannot digest grasses and leaves and must depend to a much larger degree on foods from animal sources.

The Bengal tiger receives frozen food composited from meat, corn, wheat, eggs, yeast, vitamins and minerals. In the native state, tigers and lions do not carve a steak from animals they have killed and eat it several weeks or months later. They eat the organs which are richer in nutrients, chew and eat bones which provide calcium. But the zoo cannot provide live animals for its lions and tigers to eat. It must do the best it can with composite foods which are equivalent to what the animals would eat in their native environments.

Bullfrogs live on smaller frogs, small mammals and small reptiles. At the zoo they are given crickets and pinkies. Pinkies are newborn, hairless mice.

If we were captured by some superior technology and placed in their zoos, they would undoubtedly study our native food supply and try to repeat it in the zoo. But I am certain these technologically superior nutritionists would be puzzled. Is the junk-rich diet our natural food, or is it the diet enjoyed by less technically developed peoples? I would hope that they would make an historical survey of man's food supply over the past million years, that they would realize that optimum foods are those balanced foods to which we have adapted and feed us as well as we feed the animals at the Washington Zoo.

#### WHAT IS OUR NATIVE FOOD?

Over the past thousands of years man has adapted to the locally available food supply. Food is perishable and only in recent history has it been possible to transport food over long



distances. The use of refrigerated food in transportation is less than 100 years old.

Our relationship to our food can be divided into four major eras. Each succeeding era is shorter than the preceding one. The last one, the era of junk food, is probably 100 years old, merely a second in the time required for our culture to develop. Each era represents an accelerated transformation of our diet, completely outstripping our ability to adapt.

A. The Pre-cooking Era

During this era man must have had the same foods as any other primates. We were gatherers/hunters, depending primarily on vegetable food and supplementing this with animal foods which could be caught. It is unlikely we lived in cold polar regions since fire had not been discovered. This means we had access to vegetables year round and, therefore, did not suffer from spring scurvy so common more recently in Europe. Obesity must have been extremely rare. Starvation, probably common especially during drought, was more of a problem than malnutrition.

B. Cooking - To the Development of Agriculture

Cooking developed several hundred thousand years ago. This was the second technological discovery made by man. (The first was that animals could be dismembered and cut up by knives.) Cooking had several beneficial aspects. It made it easier to digest certain vegetables and softened animal food thus requiring less work in eating. It also destroyed insects and parasites thus decreasing infectious diseases. I do not think it made food more palatable, for palatability is a matter of experience. Excluding the bitter tasting foods, people enjoy food which tastes like food they have enjoyed in their infancy and youth. People who are used to eating raw, fresh meat will continue to enjoy this meat. We, who are accustomed to cooked meat in appearance, texture and taste, find raw meat repulsive. But it cannot be concluded that cooking has made our food more palatable. I recall seeing a documentary describing the habits of native people in the South Pacific. Two teen-age girls were walking along the beach. Suddenly, one girl pounced on the sand, drew out a long, wriggling worm and with obvious relish ate it on the spot, just as a Canadian teenager might enjoy a hamburger or an ice cream cone.

The Disadvantages of Cooking Foods

There are many disadvantages to cooking. Heat alters the natural state of food and makes it less nutritious, less able to support life. Proteins are denatured. Their structure is altered so that enzymes designed to digest living protein tissue now must work on denatured tissue. Amino

acids recombine into new peptides which may be harder to digest, or they may combine with sugar to form brown substances. The outside of a broiled or fried steak or a roast is brown for this reason. Unsaturated fats are oxidized by heat and essential fatty acids are destroyed. Starches are made more digestible but sugars are oxidized. Heat labile vitamins such as C, E and others are destroyed.

Cooking is usually a combination of heat and water. Hot water dissolves more of the water soluble constituents such as sugar, vitamins, minerals and amino acids. These are usually lost as the cooking water is often discarded.

On balance, cooking was probably beneficial during the prechemical stage of nutrition for chemicals such as additives were not available so could not react with food during the cooking process.

### C. The Agricultural Era

This began about 10,000 years ago with the introduction of herding and cropping. This invention secured a stable supply of large quantities of food and made man less dependent on gathering and hunting in the wild. There was no change in food technology except for storage. It was possible to store grain for several years. Joseph advised the Pharaoh to store a seven years supply of grain in preparation for the seven year drought he predicted.

Agriculture forced a change in man's social habits from a wandering, nomadic existence to the development of large cities. Massive overpopulation as we now know it was not possible. Man's territorial confines changed from sparsely occupied areas with few interactions with others to huge, overcrowded, overconcentrated areas we know as modern cities.

Increasing food supply did not increase our workload; likely the reverse came about. Agriculture is not an easy occupation. Farmers work hard and require a lot of food, probably much more than did the earlier gatherers and hunters. Did the story of Adam and Eve and their banishment into the real world signify the transition from gathering/hunting to agriculture?

Primitive agriculture probably did not reduce the variety of food available. On the contrary, newer varieties of foods were probably selected and cropped. Modern agriculture has, of course, done the opposite because of its heavy reliance on single, high yielding varieties. Another consequence of agriculture was the increase of food for yeast-based products. Man has domesticated yeast for the production of alcoholic beverages and making bread. Or has the yeast species domesticated man to become a supplier of sugar and simple carbohydrates, both inside and outside the body?

D. Agriculture - To the Introduction of Roller Miller and Silk Screens and Modern Food Technology

Agriculture provided a stable supply of meat and meat products and even more of cereals: barley, rice, wheat, corn, oats. It is impossible to visualize the huge populations on earth existing without this remarkable supply of food. Peoples have lived primarily on whole grain foods supplemented with small amounts of fish and meat. Cereals are easily grown, yield reliably, are easy to harvest, transport and store, and retain the most important quality of food, they are whole and alive. They can be ground, baked, cooked into a variety of foods, and sprouted. Of these, breads and cakes are the most important. Ground grain has been used for making bread for thousands of years. These breads ranged in quality from heavy whole grain bread to whiter, less heavy breads, but the technology for developing the pure white, fluffy, cottony, modern bread has not been invented.

"White Bread"

Grain could be ground, but only after the invention of the modern steel roller mill and accurate silk screens was it possible to separate wheat into coarse bran and germ, less coarse middlings, and the pure, fine, white flour, the endosperm, from which we make our white bread. Grinding and separating cereal components is the basis for much of our present food technology. By 1900 white bread and pure sugar had massively displaced whole grain cereals as food staples.

"Chemicals"

Since 1945 there has been a major revolution in the introduction of chemistry into food technology. Prof. Ross Hume Hall estimated that, since the last world war, consumption of processed food has increased from 25 percent of the total food intake to over 75 percent. This provides an estimate of chemistry's invasion of our food supply.

Before I describe what chemistry has done to our food, I should acknowledge the benefits. There are only three: (1) food is cheaper, (2) it can be stored for many years and (3) it requires less work to prepare for eating. The first advantage is, however, on close examination, seldom true. Today a pound of wheat yielding under ten cents, costing to the purchaser perhaps twenty-five cents will yield many more breakfasts than the same wheat converted into a boxed cereal costing over one dollar. The second advantage is real. Processed food can be stored much longer and it can be used to provide food when natural supplies are low. The detrimental effects of storage,

however, will be described further on. The main advantage is that less work is required. It is easier to buy bread than to bake it, easier to heat up a pre-prepared meal. When both parents work, this is an important advantage for there is not time to work full-time in and outside the home. Convenience foods have made it easier for women to join the work force.

### Disadvantages of Processed Foods

In my opinion, the disadvantages outweigh the advantages. Ideally, foods could be processed and stored to minimize these disadvantages. This will undoubtedly be done several decades hence when our population is more knowledgeable about food and nutrition. The disadvantages include the effects of heat and oxidation, losses by solution, loss by fractionation, and the presence of additives. These decrease the nutritive quality of our food.

- A. Heat - Heat is very destructive. The higher the temperature, the greater is the loss of nutritional quality. Proteins are denatured and less easily digested. Amino acids recombine to form unnatural peptides. When additives are present these also take part. Sugar molecules combine with the protein. This is why meat browns. Heat also decomposes fats, sugars and most of the vitamins. Toast has lost a substantial fraction of its vitamins compared to the untoasted bread.
- B. Oxidation - Oxidation continues once life ceases. The rate of oxidation is accelerated by heat. Thus cooking, which uses high temperatures in the presence of air, is particularly destructive. Oxidation is what makes food go rancid. To prevent this, additives or antioxidants may be used.
- C. Loss by Solution - Water, especially hot water, dissolves all water soluble constituents. Some water insoluble constituents are emulsified and lost. When cooked foods are drained, those water soluble nutrients are lost.
- D. Loss by Fractionation - Losses due to fractionation are very serious. Cereals are ground and sieved. The coarse particles which contain the most nutrients and fiber are used for animal feeding. The finer, starchy particles or endosperm are used for human consumption, but this is not a whole food. Sugar is fractionated from sugar cane and sugar beet. Fractionation and recombination allows the creation of a large number of products. It is easy to develop the delusion that there is an enormous variety of foods, but the hundred or so breakfast cereals do not provide a hundred different foods; they are all composed of corn, wheat, sugar and oats. There is no increase in the variety of foods, merely a cosmetic change.

E. Additives - Of the deleterious factors in processed foods, the use of additives is among the worst. Additives are chemicals which are added in small quantities to impart special properties to the final food product. They are designed to impart taste (sugar, salt, etc.), or to preserve (sugar, salt, etc.), or to colour or to emulsify. The number of chemicals allowed runs into the thousands. Governments allow these to be used on the basis that when tested on animals individually they appear to be non-lethal and non-toxic. But Hall (1974) has shown that toxicity tests of individual chemicals do not provide a true measure of the toxicity of a large number of chemicals present in food consumed over many years. An animal may survive the ingestion of one or two chemicals, but each additional chemical throws an additional burden on the body's defence system. The body defends itself against chemicals by converting them to less toxic substances and by eliminating them in expired air, in urine, in feces, in sweat and by depositing them in skin and its appendages, hair and nails. This requires energy. The theory of a toxic dose means that a dose below this level is non-toxic, that there is a safe level. This is not considered true any more for many compounds, and even when it is true, the safe level may be so narrow that it is meaningless. Also, the safe levels will depend on the presence of other additives which are negative factors and on the presence of nutrients which protect the body. Fiber and ascorbic acid, for example, protect animals against the toxic effect of cadmium. A diet deficient in fiber and low in ascorbic acid will thus enhance the toxic effect of additives.

Another problem is the fact that additives will combine with food under the influence of heat to form new, unnatural compounds. The toxicity of these has not been studied carefully.

There are two main categories of additives: (1) those that are deleterious, (2) those that are helpful. The second class includes substances which enhance the nutritional quality of the final product. These positive additives are primarily nutrients such as minerals and vitamins. Thus, enriched white flour is better than ordinary white flour but is not as nutritious as whole wheat flour. However, the use of nutrient additives allows companies to make claims for their products which are incorrect.

Negative additives may be divided into two main groups: (1) cosmetic additives and (2) trace additives.

#### (1) Cosmetic Additives

These include all the additives permitted by law. Their main function is cosmetic. They are used to alter taste, colour, consistency, stability, etc. They include sugar (as a bulk additive which is used because it perpetuates the addiction to sugar present

in so many people), salt, colors, etc. They do not enhance the nutritional value of the food. On the contrary, they undoubtedly diminish it. I think we need a simple law which treats every final product as a drug. Before a drug can be released on prescription, it must be shown to be safe and effective for what is claimed it can do. If we applied the same idea to processed foods, we would have a much healthier society. Assume the product is the ubiquitous french fries. By this non-existent law, french fries would be fed to one group of growing animals and fresh potatoes would be fed to a second group of growing animals. If the rate of growth of both sets of animals was identical, one could claim that commercial french fries are as nutritious as whole, fresh, living potatoes. If animals on french fries grew half as fast, french fries would be labelled as having 50 percent of the nutritional value of the original food. Each processed food would carry on the label this mark of quality as well as a list of the additives.

This living test of food quality is the only way to measure the impact of processing on the product.

## (2) Trace Additives

These are the additives which are not listed on the label because the manufacturer either does not know they are there or because there is no legal requirement that they be listed. Every organic chemist knows that it is impossible to synthesize an absolutely pure compound. One of the most expensive chemicals is pure water. Whenever any chemical is made, it contains traces of the other chemicals which were used in making it. Sugar is made from cane or beet and the final product is remarkably pure, perhaps 99.9 percent pure. Yet that 0.01 percent which is not sugar does contain traces of every chemical used in making it as well as traces of the natural products present in the original food. The same principle applies to every synthesized compound. Every chemical which enters any plant in the food production line, from the farmer to the store, is present in trace amounts somewhere in the food.

A manufacturer who buys sugar to make a syrup or a pastry may know the product contains these traces and may not like it, but there is no requirement that it be listed or even detected. These trace additives are not added for any special reason. They are the contaminants from the process which converts food into processed food.

Toxicologists believe that these trace quantities are too low to be significant, but they have not proven this. If a person consumes 200 grams of sugar per day, he will also consume 0.02 grams (20 mg) of these contaminants per day. We have drugs that are highly active in these amounts; this amount of Haldol, a major tranquilizer, would keep most people totally incapacitated, and one-tenth of one milligram of LSD will incapacitate most normal people for up to one day. We know Haldol and LSD are not present in sugar, but the principle remains, i.e. we must not

assume that these small quantities are inactive.

We can minimize the amount of trace additives in our food by avoiding processed foods whenever possible and by using processed foods which have undergone the least amount of processing. Thus, rolled oats is nearly as good as whole oats and is much healthier than any sugared cereal with an oat base.

### WHAT IS ORTHOMOLECULAR NUTRITION?

Orthomolecular is the term coined by Dr. Linus Pauling (1968) to represent a radical change from the usual medicine and psychiatry which dealt primarily with the use of synthetics not made by living tissue. I have applied the same word to nutrition (Hoffer and Walker 1978) to mark a major change from the usual nutrition as it has been taught and practised for over thirty years. Standard nutrition is befogged by a number of ideas which were useful at one time but have become so corrupted by abuse they represent a prescription for maintaining disease.

Orthomolecular nutrition recognizes that people are biochemically different and have different nutritional requirements. We recognize that a large fraction of all psychiatric and medical diseases are caused by nutritional imbalances and special needs and that specific treatment must be used to repair these biochemical imbalances. We recognize that all species of animals, including man, are adapted to the kind of food supply they have utilized over geological epochs. We recognize that forcing any species of animal to eat food to which it has not been adapted will in time cause a variety of chronic illnesses, chronic for as long as the food supply remains out of tune with the species' food requirements. The National Zoo at Washington has come to the same conclusion. In brief, an orthomolecular diet is a diet to which each species has adapted. As soon as human nutritionists recognize this, we can drop the word "orthomolecular".

This diet consists of living food or food which has recently been alive. The first category provides most of our calories. It includes fresh fruit, vegetables, grains and nuts. The second category, meat and fish, provides a lot of our protein. When it is not possible to follow this diet, it should be approximated, much in the same way as at the Washington Zoo. Orthomolecular nutrition, and the Washington Zoo nutrition, is the only one which provides a balanced diet.

### "The Balanced Diet"

The concept of a balanced diet developed several decades ago. It meant that every individual should have the optimum quantity of all the components of food: protein, carbohydrate, fat, minerals and vitamins. There are two ways of achieving such a balanced diet: (1) by eating foods which are in themselves balanced but which can be combined to maximize their nutritional quality - thus a mixture of beans and corn in one meal is better nutritionally than either one consumed alone,

(2) by separating the food components and then recombining them into a balanced diet. In our natural state, before processing became so highly developed, the first method was used. Man is omniverous and used as wide a variety of food as he could. Gatherer/hunters ate every edible vegetable food and every animal or insect which moved. Big game was not a main staple for most of primitive men. Gathering was more important than large game hunting. Any primitive diet was balanced because each food was balanced and because agriculture had not yet developed means for producing huge amounts of one crop such as corn or wheat. This is the kind of balance used by the Zoo.

The first way was the one recommended by nutritionists who developed the balanced diet concept. This led to the grouping of foods into a number of groups, at first seven, now four. Nutritionists advised the public to eat adequate quantities from each group. Food technology happily seized upon this concept because it allowed them to make any food artifact and promote it as part of a balanced diet. For many years there was a vigorous battle between millers who sold white flour for bread and nutritionists who wanted the public to use whole wheat bread. The nutritionists (before 1950) argued that white flour could not support life because too much of its nutritional value had been removed when germ and the branny layers were removed. The millers replied that even if this were true, people did not live on bread alone. In other words, the other foods provided the balance. More recently breakfast food manufacturers in response to attack on the quality of their product claimed that their cereal with milk provided a balanced diet.

When most of our food was whole, unprocessed, the overall quality of the diet was good enough so that we could deal with small amounts of junk food such as sugar. The vegetables, grains, etc. would compensate for the sweets. But when over three-quarters of the diet is processed, where is the whole food which is going to cover the deficiencies induced by the processing? According to the balanced food devotees, the following meal would be well balanced: french fries and a hamburger on a white bun, a piece of apple pie and a milk shake. Yet this meal is totally inadequate with respect to vitamins and minerals and fiber, and contains too much sugar and fat.

The only way to ensure a balanced diet is to eat only foods which are balanced, i.e. whole foods, as we did throughout most of man's development and as do animals in the wild and at the Washington Zoo.

One day when we know much more about human nutrition, it will be possible to develop a mix of all the food components to create a balanced diet - we are not there yet.



## Outcome of the Present Diet

Over 75 percent of our diet consists of processed food. This diet is deficient in fiber, too rich in processed fats, too rich in simple sugars, and deficient in vitamins and minerals. It is also too rich in additives. Benowicz (1981) has calculated that the average American citizen consumes 140 pounds of additives per year. An average is calculated from the entire population including infants. Half the population consumes more than 140 pounds of this amount. 102 pounds is sucrose, 13 pounds is dextrose ( a sugar in syrup), 15 pounds is salt, 8 pounds is pepper, mustard, baking soda, citric acid and 26 other common kitchen substances and 2.1 pounds comes from 2400 synthetic cosmetic additives. He has not calculated the consumption of trace additives which probably adds another 100 grams.

I am convinced this diet is responsible for the large number of sick people today because, when they forsake this diet for an orthomolecular diet, the majority of patients become normal. When they revert back to their processed diet, their illnesses come back. I have seen this with thousands of patients, as have all orthomolecular physicians. The diseases may be classified into a few simple groups.

### A. Resulting from Too Much Sugar and Too Little Fiber

Several physical symptoms usually considered separate disease entities comprise the Saccharine disease, (Cleave, Campbell and Painter, 1969). The symptoms are peptic ulcer due to a deficiency of protein when gastric juice is secreted, i.e. when eating. Drinking a sugared, carbonated drink stimulates secretion of acid which finds no protein to which it can be attached. The excess of sugar and other simple carbohydrates causes obesity and diabetes mellitus, especially the late maturity or adult onset type. It is probably more accurate to consider this type of diabetes a variant of hypoglycemia. Relative hypoglycemia afflicts nearly two-thirds of all psychiatric populations and 100 percent of all addict populations. Out of several hundred tests, I have yet to find one alcoholic with a normal five hour glucose tolerance curve.

Excess sugar also provides a medium for yeast which inhabits our gastro-intestinal tract. The combination of too much sugar, antibiotics which destroy normal bacterial flora and allow yeast overgrowth, and birth control medication which encourages vaginal overgrowth of yeast is largely responsible for the yeast infection that troubles so many people. In addition, chemotherapy or steroid therapy decreases the immune defence system. A combination of yeast overgrowth and decreased immune defence may be responsible for a number of auto-immune diseases such as multiple sclerosis, (Truss, 1981), perhaps lupus, muscular dystrophies, rheumatoid arthritis, and so on.

Another set of symptoms arises from lack of fiber which causes chronic constipation. This leads to colitis, diverticulosis, hemorrhoids, gall bladder disease, appendicitis and cancer of the colon. The combination of too much sugar and too little fiber are main factors in causing hypercholesterolemia and atherosclerosis. Coronary disease is one outcome, as is stroke.

There is little doubt that if we reverted back to the high fiber, lower sugar diet of 1900, coronary disease would almost disappear and heart surgeons would have little to do.

The effect of high sugar and low fiber on gastro-intestinal physiology is becoming clearer. When whole foods only are consumed, the masticated food, the enzymes and food added to it, and the products of enzymatic digestion are propelled through the gastro-intestinal tract and clear the system in less than 24 hours. The longer food remains in the gut, the higher is the bacterial and yeast cell count, for these organisms thrive in the warm, wet medium containing partially digested food. There normally is a gradient of bacterial count which is lowest in the duodenum and highest in the colon. The whole gastro-intestinal tract functions to keep the bacterial yeast count low in the small intestine where most of the nutrients are absorbed, while allowing the bacterial count to rise in the colon where there is little absorption. The products of bacterial metabolism, which are harmful, are thus retained in the colon and excreted with the feces.

#### "The Bacterial Count Gradient"

The ortho-molecular diet maintains this gradient, assuming of course that the food is free of bacterial infection. Living food (which is the orthomolecular diet) tends to be low in bacteria and yeast infection. But the longer food is stored, the greater the contamination, except for food specially sterilized by the strong hydrochloric acid in the stomach. Once food starts travelling down the small intestine, its bacterial count slowly goes up. But peristalsis keeps feeding lightly contaminated material into more heavily contaminated material. The passage of food tends to decrease invasion of the intestine by bacteria. Reverse peristalsis would throw highly contaminated material into an area where it is usually not present. In the absence of sufficient fiber, peristalsis is decreased, leaving food in the intestinal system much longer. The typical North American transit time is about 72 hours. As a result, bacterial content of the feces is much higher in areas of the intestine where this normally does not occur. Up to 90 percent of the dry weight of feces may be bacterial, but, in the colon and rectum this causes no harm. The small intestine must, however, be kept free of bacteria. When too much sugar is present, it stimulates the overgrowth of yeast. The saccharine inducing diet also leads to bacterial and yeast overgrowth in areas of the intestine where this should not occur.

Fasting, with or without enemas, has been used for many decades to treat a variety of diseases ranging from cancer and arthritis to serious psychiatric problems. Perhaps the common factor is the elimination or marked reduction of candida from the gastro-intestinal tract. A four day fast (96 hours) would eliminate yeast from most people. But for a person with a normal (fast) transit time one or two days might be enough. A water

diet would be more therapeutic than a juice diet as the sugar in the juice would provide nourishment for the yeast. A combination of enema and fasting would be more effective than a simple fast, specially for people with sluggish bowels.

#### B. From the Wrong Type and Quantity of Fat

The processed diet of modern technological societies contains too much fat and its quality has been deteriorated by the processing. These problems do not arise when whole foods are consumed since they seldom are very rich in fats and what fat is present is not destroyed by heat or by oxidation. It is unlikely that a whole food diet would contain as much as 10 percent fat. But, when the fats are separated from the food, it becomes possible to consume very large quantities. These processed fats include butter, cream, margarine and all the commercial oils. The problem with butter and cream is that it is too easy to eat large quantities and, therefore, to overload the body with calories. The problem with commercial oils and margarines is that they are heat treated and oxidized. The natural cis fatty acids are racemized by heat into the unnatural trans fatty acids. There are no enzymes in the body which can metabolize the trans fatty acids. This creates problems for the body. It has been suggested that these fatty acids are one factor in hastening atherosclerosis; another consequence of heating the food is the destruction of essential fatty acids. These essential fatty acids (EFA) are highly reactive and easily become rancid when stored. They are undesirable in oils when they must be stored, therefore, they must be removed. This deprives us of these EFA which creates a variety of pathological conditions. Rudin (1981, 1982) gathered evidence that this deprivation is a factor in development of senility. In addition to the loss of EFA by oxidation, there has been a displacement of foods rich in EFA by sources which contain very little. Crops which grow in warm areas do not need protection against cold and, therefore, have little unsaturated fatty acids. Temperate crops such as wheat, oats and flax require more. Unsaturated fatty acids have lower melting points. Flax and its oil, linseed oil, used to be used as staples many years ago. It has been replaced by corn, coconut, canola and other warmer crop oils. As a result, we consume only 20 percent of the EFA our parents consumed until the last world war. Rudin (1981) and Horrobin (1977, 1979) have begun to study the number of diseases which require EFA (linseed oil and evening primrose oil). These EFA are precursors of the ubiquitous prostaglandins.

There is no doubt that fats are involved in atherosclerosis, that high blood cholesterol and high blood triglycerides increase the risk of developing atherosclerosis. I believe that there is no relationship between consumption of whole foods and atherosclerosis. These foods will prevent elevation of blood fats, except in familial hypercholesterolemia. But I would expect that consumption of pure fats is related. Thus, there should be no fear of eating eggs which are a whole food, but I would be concerned over utilization of butter, margarine, and the commercial

oils. If epidemiologists would report total fat intake, fat intake from whole foods and fat intake from butter, cream, margarine, and oils, they would have a much clearer view of the relationship of fats to atherosclerosis, coronary disease and strokes. The Pritikin diet rigorously excludes all processed fats; the fat content of this diet is about 10 percent.

#### C. Diseases Arising from a Deficiency of Vitamins and Minerals

The classical deficiency diseases are no longer produced. We rarely see scurvy, beri beri, pellagra, rickets. These are terminal diseases produced by very unusual circumstances. Modern deficiency diseases cause vague, diffuse symptoms. These patients share in common the fact that usual clinical examination and laboratory tests do not reveal a cause for their fatigue, distress, and malaise. Most are eventually labelled as psychosomatic or psychiatric. Because the classical deficiency diseases are not seen, it is more appropriate to call them sub-clinical deficiencies. Medical literature contains reports of sub-clinical deficiencies, especially among residents of hospitals and nursing homes.

#### D. Diseases Arising from Additives

We are just becoming aware of the impact the food additives have. It is my impression they are a factor in diminishing the immune defences. They also play a role in causing learning and behavioral disorders in some children (Feingold, 1974).

It is unlikely that there are pure or simple relationships between diet and disease. The whole diet must be involved. A number of diseases probably arise from the total constellation of factors which make up our modern diet. I will list and comment briefly on a few.

#### Diseases Resulting from Diminished Immune Defences

##### (1) Cancer

The majority of cases of cancer are due to environmental factors - chiefly the chemical pollutants in our air, water, soil, and food. But inasmuch as most of us do not develop cancer, there must be a second set of factors, the immune defences. Our modern processed foods with all the defects, especially with the additives present, must play a role in decreasing immune resistance. It has been shown, for example, that leukocytes deficient in ascorbic acid are not able to engulf bacteria. Furthermore, the only substance known to increase interferon production in the body is ascorbic acid. Treatment for cancer must include: (1) an attack upon the tumor with minimal destruction of the rest of the body and its defence system. This is why I consider radiation less hazardous than chemotherapy; (2) a program to enhance the immune defences. This includes orthomolecular nutrition, supplemented by optimum quantities of ascorbic acid (Cameron and Pauling, 1979), other vitamins, zinc, and other minerals.

## (2) Auto-Immune Diseases

Auto-immune diseases include diseases such as rheumatoid arthritis, multiple sclerosis, lupus, and perhaps muscular dystrophy. This means that the immune defences attack normal tissue. Treatment for these diseases is largely palliative using steroid hormones and immunosuppressants. When they do help, improvement is temporary and partial. Nutritional therapy has been studied and used on very small numbers of patients. For MS see Klenner (1973), for lupus Aladjem (1972), for arthritis Kaufman (1943, 1949).

Recently Truss (1981) reported the use of an anti-yeast therapeutic program for treating five cases of MS. In these patients the natural killer cells were at a 1 percent level in blood, not the normal 15 percent. Under treatment, these cells increased to normal levels. At the same time, there was a significant clinical improvement. Truss suggests that the chronic yeast, candida, infection may lead to an immobilization of the natural defence system and a distortion of the relationship between various types of leukocytes. Treatment allows these defences to be restored. The main treatment is an anti-yeast drug, "Mycostatin", see Truss (1981).

Diet plays a role. The high sugar, low fiber diet stimulates yeast overgrowth.

## (3) Psychiatric Diseases

### (a) Learning and Behavioral Disorders in Children

These have been related to our modern diet. I have treated about 800 children since 1967. There is no doubt a very large fraction of this group were made ill by the food they ate and recovered when they were placed back on the whole or living diet to which man is adapted.

### (b) Antisocial and Criminal Behavior in Adolescents

The same diet responsible for learning and behavior disorders continues to act on adolescents. But this group is much more apt to engage in violent criminal behavior. I have seen how addiction to sugar paves the way for criminal behavior during adolescence. Invariably children steal money from their parents, later from others, in order to buy sweets. They may not be caught for a long time. They may be found to be stealing only a small fraction of the time. If they are punished ten percent of the time, this may be an acceptable price for the sweets gained with no punishment 90 percent of the time. Once a pattern has been developed, it will continue into adolescence where the wants are different but the method of achieving them is the same. Now they steal for street drugs, for cigarettes, and for alcohol. For a discussion of the relation of diet

to criminal behavior see Reed (1983), Hippchen (1978, 1981, 1982) and Schauss (1980).

(c) Mood Disorders

These are the psychological component of the saccharine disease. The symptom complex includes fatigue, depression, and anxiety. Most of the very severe depressions and the manic-depressive patients do not fall into this category. It is likely other nutritional mechanisms operate these. Recently, vanadium-rich foods have been implicated in mood swing disorders. The effect of the vanadium is neutralized by ascorbic acid. This may explain my observation of many years that manic-depressives under my care usually require smaller doses of lithium carbonate than are generally recommended. My patients also receive orthomolecular treatment with ascorbic acid as a component.

Very few anxiety or tension states would require Valium and similar anti-anxiety drugs if the patients were routinely placed upon the whole, living-food diet now used by the Washington Zoo.

(d) The Schizophrenias

The relationship of these diseases to diet is not as clear. A large number of patients are allergic to one or more foods, the expression of this allergy being the schizophrenic syndrome (Philpott 1974, 1979; Mandell and Scanlon, 1979). Staple foods most often cause allergic reactions. An excessive use of any foodstuff may thus be the food the patient is reacting to. I have seen over a hundred schizophrenic patients become almost well after a 4 to 9 day fast, because the foods making them ill were no longer being used. Following Truss' observation of the relation of yeast to psychiatric disease, it is possible these fasts were helpful because they greatly reduce yeast in the bowel, as do purges and enemas.

Conclusion

Modern food technology has become food chemistry. We know a good deal about the chemical structure of food. But in the process of developing the chemistry of food, we have neglected to study the physiology of food. There is, thus, an almost total imbalance between our needs and what we eat—almost as odd as feeding lions only on grass. Our needs are for the type of whole foods to which our ancestors had adapted 10,000 years ago. Since then we have remained the same physiologically but our food supply has been altered until it is only a caricature of what food should be. This imbalance is the main factor in causing most of the physical and psychiatric diseases we must deal with. There will be no relief from the enormous psychosocial, physical and economic costs of this

imbalance until it is corrected, until we return to the whole living diets of our ancestors, or until we adopt the feeding principles and practises of the Washington Zoo. But we know more than did our ancestors 10,000 years ago. We know about nutrient supplements. We should, therefore, use the best food available and for those with special needs provide the extra quantities. We should practise the principles of orthomolecular nutrition.

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Dr. Abram Hoffer, M.D., Ph.D. is a biochemist, medical doctor, psychiatrist and editor-in-chief of The Journal of Orthomolecular Psychiatry. Located in Victoria, British Columbia, he is known internationally for his work using nutritional approaches to health maintenance and the treatment of illness.

Subscriptions to The Journal of Orthomolecular Psychiatry may be obtained through:

The Canadian Schizophrenia Foundation,  
2229 Broad Street,  
Regina, Saskatchewan, Canada,  
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465 \* 8, Hwy.,  
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